WHAT IS CLAIMED IS:

1. A method of making a living tissue construct for repairing a perforation in a tympanic membrane, the method comprising

providing a negative mold having a negative shape of the construct;

suspending isolated tissue precursor cells in a hydrogel to form a liquid hydrogel-precursor cell composition;

introducing the liquid hydrogel-precursor cell composition into the mold;

inducing gel formation to solidify the liquid hydrogel-precursor cell composition to form the living tissue construct; and

removing the living tissue construct from the mold after gel formation, wherein the construct has a shape suitable for repairing a perforation in a tympanic membrane.

2. The method of claim 1, wherein the tissue precursor cells are chondrocytes or fibroblasts, or a combination thereof.

3. The method of claim 1, wherein the tissue precursor cells are chondrocytes.

4. The method of claim 1, wherein the hydrogel is selected from the group consisting of alginate, chitosan, pluronic, collagen, and agarose.

5. The method of claim 1, wherein the hydrogel is alginate.

6. The method of claim 5, wherein the alginate concentration is from 0.5% to 8%.

7. The method of claim 5, wherein the alginate concentration is from 1% to 4%.

8. The method of claim 5, wherein the alginate concentration is approximately 2%.

9. The method of claim 1, wherein inducing gel formation comprises contacting the liquid hydrogel with a suitable concentration of a divalent cation.

10. The method of claim 9, wherein the divalent cation is Ca^{++}.

11. The method of claim 10, wherein the suitable Ca^{++} concentration is 0.2 g/ml of the liquid hydrogel-precursor cell composition.

12. The method of claim 1, further comprising culturing the tissue precursor cells in the solidified hydrogel construct for a period of 1 to 30 days.

13. The method of claim 1, wherein the negative mold is prepared using CAD/CAM or rapid prototyping.

14. A method of repairing a perforation in a tympanic membrane in a mammal, the method comprising

providing a suitable negative mold having a negative shape of a living tissue repair construct;

suspending isolated tissue precursor cells in a hydrogel to form a liquid hydrogel-precursor cell composition;

introducing the liquid hydrogel-precursor cell composition into the mold;

inducing gel formation to solidify the liquid hydrogel-precursor cell composition to form the living tissue repair construct;

removing the living tissue repair construct from the mold after gel formation; and

implanting the living tissue repair construct into the perforation in the tympanic membrane in the mammal.

15. A method of repairing a perforation in a tympanic membrane in a mammal, the method comprising

obtaining a living tissue construct shaped to fit into the perforation; and

implanting the tissue construct into the perforation in the tympanic membrane in the mammal, wherein the construct is prepared by the method of claim 1.

16. An injection-molded living tissue repair construct made by the process of claim 1.

17. The method of claim 1, wherein the hydrogel is selected from the group consisting of polysaccharides, proteins, polyphosphazenes, poly(oxyethylene)-poly(oxypropylene) block polymers, poly(oxyethylene)-poly(oxypropylene) block polymers of ethylene diamine, poly(acrylic acids), poly(methacrylic acids), copolymers of acrylic acid and methacrylic acid, poly(vinyl acetate), and sulfonated polymers.

18. The method of claim 1, wherein the tissue precursor cells are selected from the group consisting of epidermal cells, chondrocytes and other cells that form cartilage, dermal cells, fibroblasts, endothelial cells, ear canal cells, tympanic membrane cells, and epithelial cells